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Alfred E. Seyler, D.D.S., F.A.C.D., Editor
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from your president

It wasn't a "Squad"!! It wasn't a "Platoon"!! It wasn't a "Company"!! It WAS A "BATTALION"!!! Yes sir, we had a total of 743 registrants at the annual meeting in the Sheraton-Palace Hotel in San Francisco, California. This is not only the largest meeting we have ever had, but it exceeds our previous record attendance by two times. And it was as good a meeting as it was big. To say that our program was outstanding seems like a very trite understatement. Just for fun, get out your Third Quarter 1955 Journal of Dentistry for Children and look over the program for the meeting. Now, in spite of what you might have heard about these Californians, the program was not only as good as they said it would be, but it was even better. If you missed this meeting, I'm sorry. If you were there with us, join me in telling everyone what a wonderful meeting it was.

Now, for the coming year. I would like to make National Children's Dental Health Day, 1956, one long to be remembered. I would like to feel that each of you is in some way helping your local committee to do a better job this year. We who are interested in Dentistry for Children should spearhead this celebration. Every home, on every lane in this big country of ours should be made to be aware of their family's dental needs. We are unique in that we are not asking these families for some contribution or donation; we are only asking them to evaluate their needs, dentistry-wise, and let us advise with them about caring for those needs. I hope that every member of the American Society of Dentistry for Children will share in the responsibility for making National Children's Dental Health Day in his own community the biggest ever.

HENRY M. WILBUR

A Shoulder Preparation and Veneered Gold Jacket for Fractured Young Vital Permanent Incisors

MELVIN A. NOONAN, D.D.S., M.S.

ONE of the greatest problems which faces the dental practitioner is the treatment and restoration of fractured young permanent incisors. Although diagnostic procedures and pulp therapy have advanced, the types of restorations for fractured young permanent teeth have not progressed to the same degree. The shoulderless acrylic jackets and the ¾ gold crowns with silicate cement or acrylic windows have given fine service in protection but have failed to meet the requirements of esthetics.

Young permanent incisors do present a problem because the pulps are large and the tooth has not erupted fully into the oral cavity but these facts should not be used for an excuse to avoid proper restoration.

It has not been many years ago when it seemed to be good advice to postpone any type of restoration until the patient had reached the age of 15 or more. Less than ten years ago it was recommended that these teeth be restored with a gold crown which was to be "worn until the boy is old enough to have a permanent restoration placed."[1]

The modified ¾ crown[2] and basket crown[3] required some preparation to the tooth. The ¾ crown with the cast pin[4] required even more. The success of these restorations proved that the young permanent teeth could be prepared carefully without death of the pulp but esthetic results were only fair.

After a three year period of making a shoulder type preparation the author feels that this preparation can be used on vital young permanent teeth without damaging the pulp and gaining a greater degree of esthetics with emphasis on durability and retention.

The scope of this paper is confined to the discussion of the veneered gold jacket which is now being used on fractured permanent incisors.

A shoulder is prepared on three surfaces of the tooth: mesial, labial and distal surfaces. The shoulder on the proximal surfaces can be established by using disks to remove the proper amount of tooth structure. A diamond wheel can then be used to establish the labial shoulder. The labial enamel is removed and the incisal edge is cut back to permit proper alignment of the jacket with the adjacent teeth.

The lingual surface has no shoulder but is freed enough from occlusion to allow for the proper thickness of gold.

The shoulder must be finished with either gingival marginal trimmers or files to give an outward bevel and an inward inclination. The shoulder should be finished under the free margin of the gingiva.

All operative procedures should be done under a water spray or some other method of cooling to prevent overheating of the tooth structure.

Figure 1 shows the shoulder preparation on a fractured vital tooth of a patient age 9. The shoulder is approximately 1 mm. in width and follows from mesial across the labial and on the distal surfaces. At the points where the proximal

FIG. 1. Shoulder preparation on vital permanent incisor of a patient age 9.

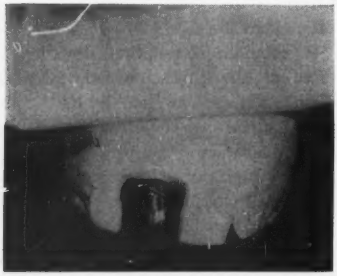

FIG. 2. Electroplated die in place on model

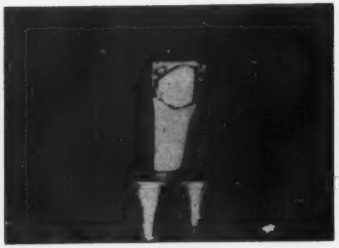

FIG. 3. Labial aspect of the cast gold coping on a model showing retention loops and labial gold band.

FIG. 4. Proximal aspect of the gold coping on a model showing retention loops for the acrylic.

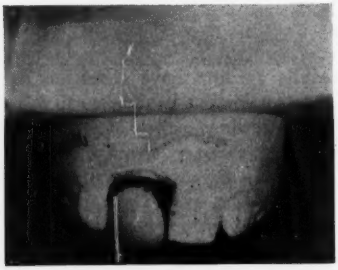

FIG. 5. Veneered gold jacket on die in place on model.

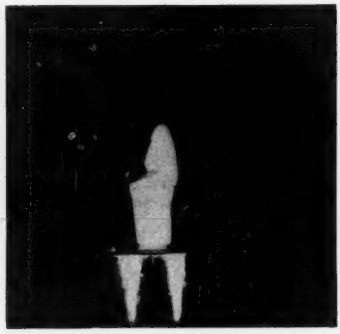

FIG. 6. Proximal view of veneered gold jacket

FIG. 7. Veneered gold jacket cemented into position on a vital central incisor of a 9 year old patient.

shoulders meet the lingual surface the shoulders become "feather-edged." The lingual surface and incisal edge are relieved for proper occlusion.

A compound impression is taken and a copper plated die is made (Fig. 2).

A gold coping is cast which covers the lingual and the two proximal surfaces (Figs. 3 & 4), On the labial surface at the shoulder a band of gold 1 mm. is wrapped around the tooth. This gold band does not cover the shoulder. At the incisal edge the gold just slightly catches the labial surface. Fine gold wire loops are inserted into the wax pattern and in the finished casting serve as retention loops for the processed acrylic (Figs. 3 & 4). Due to the many disadvantages of self-curing acrylic resins at this time they are not used or recommended.

Although almost all of the retention is gained from the gold none of it can be seen from the labial surface (Fig. 5). It is the acrylic that contacts the labial shoulder. Some gold is seen on the proximal view (Fig. 6).

Figure 7 shows the veneered gold jacket in place in the patient's mouth. One factor that must be considered is the cervical line which is established on the preparation. On the younger patients these teeth may not have erupted fully into the oral cavity and when they do the cervical line of the shoulder may show. This problem is not as great as it may seem. These jackets can be removed; a new shoulder established and another facing processed to the same gold coping.

CONCLUSIONS

1. Shoulder preparations can be made safely on young vital permanent teeth.
2. A greater degree of esthetics can be obtained with the veneered gold jacket.
3. Durability and retention of the veneered gold jacket are excellent.
4. The shoulder can be re-established when the tooth is fully erupted without complete loss of the jacket. The gold coping can be re-used and a new facing processed to it.

630 N. Woodward Ave.
Birmingham, Mich.

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Amalgam in Pedodontics

HUGO M. KULSTAD, D.D.S.

THERE are more teeth filled with amalgam than with all other materials combined,[1] and it has saved more teeth than all other materials combined.[2] More office time is spent on amalgam fillings than any other office procedure,[3] and yet it seems to me less space is devoted to the subject in our dental journals, and less time at our meetings, than to almost any other single procedure in dentistry!

Even though we do so many amalgams and they do save so many teeth, evidently practice does not make perfect. Fifty-six percent of all amalgam failures are due to faulty cavity preparation.[4] Contamination and faulty manipulation accounts for forty percent of the failures.[5]

Amalgam responds beautifully to precision technics and restorations of intricate design and perfect function may be developed that are satisfying to both operator and patient. On the other hand, because of its plastic nature, amalgam lends itself to abuse by the slipshod and careless operator. It is doubtful if any person who could get through dental school and pass a state board could not also do the finest kind of amalgam work and yet might not be particularly good at crown and bridge or inlay technics. Because the material is moulded to the cavity walls, and no pattern need be made, slight irregularities in walls and floors do not affect the quality of an amalgam. Ordinarily it takes little more time to do a good piece of work than one that will fail, so there is no excuse to not make each job our very best.

Just about everyone dislikes having a tooth filled and the main reason is fear of pain. It is therefore good practice to do everything possible to eliminate all physical and emotional pain. In my opinion, anesthetics should be used routinely unless there is logical objection. The objection should be based on one of those medical reasons for omitting all anesthetics. There is such a wide variety of anesthetics available that in most any condition one or more will prove to be safe and desirable.

It is well to limit the choice of drugs and materials to those approved by the American Dental Association, as published in the "Approved Dental Remedies". Sleep producing anesthetics are used widely in some offices; nitrous oxide-oxygen, pentathol sodium, and many others.

ANESTHETICS

The choice of anesthetic or sedative should be left to the operator, and I see no reason to let patients prescribe their own treatment, whether it be anesthetic or filling. In all cases where a hypodermic needle is used a good topical anesthetic should be used. It is true that there is little pain to a well-administered local anesthetic in mouth tissues, if good equipment is used. On the other hand, do you like to have a needle stuck into you? I don't, and prefer that a surface anesthetic be used.

In young patients infiltration is almost always satisfactory for upper preparations, and in the lower a mandibular block is easily done and works well.

Premedication

Premedication may be used with nervous and apprehensive patients as indicated. It is well to have a knowledge of several sedatives so the correct one may be administered or prescribed.

Assuming that proper examination, diagnosis, and treatment plan have preceded this first appointment, and amalgam is the material of choice, we would proceed with our anesthetic. The normal waiting time for anesthesia is used to place the rubber dam.

Rubber Dam

Rubber dam is essential in good amalgam work for a number of reasons: 1) Insures a dry field for preparation of cavity and for filling. Even the slightest amount of moisture is detrimental to amalgam. Not only must we exclude saliva, but the slightest oozing of the gum tissues or hemorrhage must also be excluded. 2) Operating time is reduced because of better visibility, no time out for washing and spitting, thereby saving many times the few minutes required to place the dam and reducing time in chair for child.[6] 3) Protection to patient by control of tongue, cheeks, and lips, making the use of all cutting instruments easier. Keeps all dust, debris and foreign objects out of throat. 4) Acts as the finest patient control device in the practice of dentistry for children. They feel protected from the instruments and procedures. The elastic around the head seems to indicate to the child that the head is stabilized in the headrest and he invariably keeps it there. Seldom does a child move the head for any purpose until the dam is removed.[7] 5) The dam is a great help in using inhalation anesthetics and 6) absolutely essential if the gas driven abrasives are used to cut cavity.

With the dam in place and the patient comfortable, we always swab off the exposed teeth with alcohol, except where silicate cements are present. These are always covered by cocoa butter or vaseline while dam is in place. If there is any bleeding during the placing of the dam, it can be quickly cleaned out of dam and off teeth by swabbing with hydrogen peroxide followed with alcohol.[8]

Cavity Preparation

Cavity preparation must follow the established rules. As stated, studies have shown improper cavity preparation is the greatest single factor in amalgam failure. Although cavities may many times be cut more conservatively than for an inlay, they must always be extended to self-cleansing areas. Bulk of filling material is very important and both depth and width must be adequate. A sharp occluso-pulpal angle is contra-indicated, and cavo-surface angles are never beveled. It is impossible to condense properly prepared amalgam against slanting and curved surfaces. Retention points and grooves should be definite but not too narrow, since amalgam has a tendency to follow the characteristics of mercury and "ball," making it difficult to condense into fine lines and points. Of course, we leave no overhanging margins of enamel and all weak walls are removed.

Matrix Adaptation

Matrix adaptation and support should be given careful attention. Especially must we be sure to have the gingival area tight and wedged to retain the filling material during condensation. It is much easier to spend a little extra time on the matrix than to remove overhanging margins in the interproximal.

Wedges made from round toothpicks

seem to serve ideally in a large proportion of cases. Generally, two quick cuts with a sharp knife will form a "V" edge on the top side and the bottom remains smooth and rounded permitting easy insertion between teeth and over the rubber dam. The gradual increase in size makes it possible to get just the right amount of pressure in most embrasures. The length of the wedge can easily be changed with the knife and it is well to make a flat spot on the top side to give better grip with tissue forceps which are used in placing wedge.[9] Ordinarily, these wedges stay well and compound will secure those that tend to slip. Red or green stick compound works well to support the matrix band and sticks well to the band, tooth and dam. The compound on the buccal and lingual may be secured by using a staple made from a paper clip. A matrix cord serves well in some cases to support the gingival of a matrix.[10] A heavy cotton cord is coated with red compound. These may be prepared in quantity and kept on hand. The compound is heated and the cord passed through interproximal and may, or may not, be carried entirely around the tooth. Additional compound is added on buccal and lingual to support band.

There are some mechanical wedges on the market that may work well, but most operators seem to prefer making their own. Some cut their wedges from tongue blades.

Sterilizing the Cavity

Sterilization of cavities is an important part of our procedure, but with a good dam in place during the preparation and toilet of the cavity, our problem is kept to a minimum. Many agents have been used and recommended by countless good operators. Some research has been done, but not enough. I have noticed that many writers completely ignore the topic either because they think it unimportant, or because there is so little conclusive evidence to support any method. The silver nitrate era, when this material was used to treat gum conditions, to stop caries that had begun by painting, to make teeth immune by applying to all surfaces, and for root caval and cavity sterilization, nearly ruined the chances of survival for any purpose. Ammoniacal silver nitrate is still considered by many as a fine agent for posterior teeth. Phenol and alcohol, eugenol, thymol, metaphen, and a score of other preparations are presently used. At present, it would seem to be up to the operator. Although cavity varnishes presently on the market may not be entirely moisture proof, they certainly come close to being and, at any rate, will help seal the tubuli. Therefore, since any moisture in contact with the unpolished interior surfaces of the amalgam filling will cause tarnish by formation of sulphides, it is well to use varnish routinely; especially in any tooth where a dark shadow will be esthetically undesirable should we be careful to avoid any discoloration.

The Alloy and its Preparation

The selection of an alloy is no longer a problem, since all leading manufacturers conform to the A.D.A. specifications. There are some minor differences that may seem like advantages in the hands of different operators, but if the directions of the manufacturers are followed, good results will be regularly obtained. The A.D.A. specifications allow for variations that will require varied procedures with the possible differences in formula. It is necessary to use the exact proportions and mixing instructions for each alloy. The proportions may be obtained by weighing or by a mechanical dispenser. If a mechanical dispenser is used, it should

be set by the user of the alloy to the exact proportions required.

The amalgamation is also a simple but exacting procedure. If mechanical amalgamators are used, it is imperative to follow directions precisely. In a mixing time of six to eight seconds, the variation of as much as one second will change an amalgam completely. It is presumed that the alloy being used is fresh. Alloy, especially if not hermetically sealed, will tarnish and this will slow the amalgamation process. Under-trituration will result in poor amalgamation, a weak filling, flow under pressure, too fast setting, and will be more difficult to polish and will not stay polished. Over-trituration should also be avoided since it is apt to break down the alloy particles too much, change the normal setting time and result in an over-expanding amalgam.

Hand amalgamating is entirely acceptable if directions are followed. Exact pressure on the pestle in a properly conditioned mortar at a given rate of speed for a predetermined time is essential. A very little amount of practice will permit the necessary accuracy and the finished product will be every bit as good as if triturated by mechanical methods. Most alloys are carefully compounded from exact formulae under ideal conditions, and cut, and the granules mixed as to size in definite proportions. To exert too much pressure in the trituration will change the particle size and may change the quality of the finished product. In blending definite amounts of varying sizes of particles, a homogeneous mass is permitted because of the natural way the different size particles will fit together. It is best to hold the mortar in the palm of the hand and hold the pestle with pen grip in the other hand.

The mortar may be conditioned by mixing a paste of F.F. carborundum powder and water, rotating both the mortar and pestle until no shiny spots remain on either. Then the pestle fits the mortar and a better mix will be obtained in much shorter time.

When trituration has been completed by method of choice, the amalgam should be mulled. This is done by placing it in a piece of clean rubber dam and rolling it between the fingers, or by using a finger stall and rubbing it in the mortar. The amalgam will become more bright and plastic.

Condensation

Condensation should follow immediately since no mix should be used for over four minutes, which is the critical crystalization time. A small portion is placed in a squeeze cloth, and the excess mercury compressed out. The desired amount of the amalgam is then taken to the cavity with an amalgam carrier. At no time is the alloy or amalgam touched with hands or fingers. Condensors of proper size and shape to best work in the particular cavity are chosen. The amalgam is condensed by a stepping action of condensor with sufficient pressure to mould the material into the retention points and smooth it on the floor of the cavity. Another portion of amalgam is then placed in the squeeze cloth and the excess mercury expressed. Finger or plier pressure may be used, depending on ability of assistant. Amalgam must be relatively dry. Each portion is treated in the same manner and each taken to cavity in the carrier. As the separate portions are condensed mercury will rise to the surface and must be scooped out. The proper size and shape of the condensor point may change as filling progresses. Smooth or serrated points are equally effective.

Mechanical, pneumatic or hand condensors are equally effective when prop-

erly used. It takes about ten pounds pressure on a one millimeter point to get proper condensation. A pressing action, along with vibration, stepped along the surface of amalgam from center toward walls seems to work best.

Carving and Finishing

The cavity should be over-filled and carving the occlusal surface to approximate form may start immediately. When this is finished the matrix should be carefully removed so as not to disturb the filling. Generally, removing it to either lingual or buccal is best. Any further shaping may be done before the dam is removed by cutting the interproximal segments and then occlusion carefully checked to see that the filling is not too high. Unless one is an extreme optimist it is well to check the gingivae for possible overhang before patient is dismissed. The excess will be easier removed at this time than when completely set. No burnishing is ever done on amalgam. Patient must be warned not to bite or chew on fresh amalgam—it takes hours to set.

Polishing

The polishing is done after at least twenty-four hours; however, seventy-two is better. The usual equipment may be used, being cautious, because amalgam cuts fast. Plug finishing burs, regular burs, (some use dull ones) stones, and discs of all grits may be used to develop final anatomy. Then wet pumice, and a gradual reducing in abrasiveness until a high lustre is obtained. Brushes, felt and hide wheels may be used. Avoid heat. All polishing generates heat that is damaging to the filling and most uncomfortable to the patient. Some operators put on the dam for polishing amalgams and it helps to do a fine job. A separator may be used if contact is to be touched at all. To attempt to polish contact without separation, by stripping, will cause a flat surface. Polishing is necessary to remove the "bloom" of the amalgam to cut down on galvanic action and to bring out the true value of the filling.

Amalgam work, properly done, costs less than gold fillings, but is not "cheap" dentistry. The patient will be compensated by good service from the filled tooth and the operator should be compensated by a fair fee.

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1621 17th St.
Bakersfield, Calif.

A Simple Space Maintainer for the Primary Dentition

Odd Reidar Sannerud, D.D.S.*

Introduction

PREMATURE loss of primary teeth is generally accepted as one of the factors causing malocclusion in the permanent dentition.[1-12, 16-18] In certain cases the space created by extraction may be kept open by means of specially constructed fillings, inlays and crowns fixed to the teeth of the opposite jaw,[10] or by means of temporary bridges between teeth, proximal to the extracted one.[7, 10, 12, 17, 18] Space maintenance may also be achieved by means of removable orthodontic plates.[1]

These methods may all give good results, but some of them are rather complicated and costly. This may limit their use, and many cases appear to be left untreated during the mixed dentitional period for that reason. The method described in this paper constitutes an attempt to simplify the procedure to such an extent that time and economy should be no hindrance for its application in all cases, while at the same time the requirement of a high standard of treatment is maintained. This new space maintainer is based on a special ligature technique with the application of stainless steel wires into the healthy gingival pockets of the teeth adjacent to the extracted one. Such a procedure seems to be justified when based on the concept of the gingival pocket as maintained by Waerhaug.[13] According to this concept, a healthy gingival pocket is one in which normal epithelial cells join the tooth to the gingival margin. These cells, usually called the "epithelial attachment" were found to have no real organic attachment to the tooth surface, and the bottom of the clinical pocket was found to lie at the deepest line of this epithelial cuff (epithelial attachment). A severing of the connection between the tooth and the epithelial cuff was observed to heal, and bacteria which were purposely inserted disappeared within a short period of time.[14] A well polished stainless steel wire was found to be well tolerated by the soft tissue.[14]

* Chief Dental Officer, Public Dental Service, Sandnes & Hoyland, Norway.

Space Maintainer Fixed to Teeth on Both Sides of the Space

In this type, the space is kept open by means of a coil spring made of 0.25 mm stainless steel wire (Fig. 1). This wire, which should be of the hard type, is coiled on a 0.7 to 0.9 mm wire. As the coil spring will be more rigid the smaller the diameter, it is of importance to keep this as small as possible. When the coil spring has been given the proper length, it is fixed to the abutment teeth with a 0.25 mm *soft* stainless steel wire which passes through the coil. The wire should be thoroughly tightened, and with a thin instrument pressed down to the bottom of the pocket. It is important that it should not be movable in relation to the tooth. On the other hand, too much tightening may cause unnecessary depression into the periodontal fibers. When the

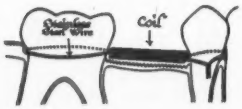

FIG. 1. Space maintainer with abutment teeth on both sides. Space is kept open by means of a coil spring made of *hard* stainless steel wire (0.25 mm thick). The coil spring is attached to abutment teeth by means of *soft* stainless steel ligature wire (0.25 mm thick) passing through the coil. The wire is pressed to the bottom of the gingival pocket and thoroughly tightened. The twisted ends of the wire are embedded in the soft tissue buccally.

space maintainer has been brought into proper place, the twisted ends of the wire are cut at a distance of about 2 mm from the tooth. Finally, the wire is pressed completely into the gingival pocket leaving only the twisted ends of the ligature wire protruding out of the pocket. If it seems likely that the child will play with the ends of the wire protruding out of the pocket, these may be turned apically and completely embedded in the soft tissue. The coil spring should be adjusted into such a position that it may not cause the permanent tooth to deviate when erupting.

For illustration of this type of space maintainer, a first primary molar has been chosen (Fig. 1). It can, however, be used for any tooth within the primary dentition. Radiographs from patients carrying space maintainers of this type are shown in Figs. 4 and 5.

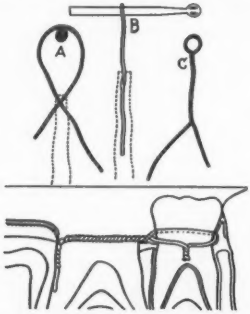

FIG. 2. Space maintainer for second primary molar with distal anchorage in the tooth socket. A. and B. demonstrate preparation of a string (C) of soft stainless steel wire (0.4 mm). The twisted string is made 3 mm. longer than the distance from distal surface of first primary molar to distal wall of socket of the second primary molar. The distal end is bent to butt against the distal wall of bony socket of the extracted second primary molar.

SPACE MAINTAINER FOR THE SECOND PRIMARY MOLAR

The previously described space maintainer requires teeth on both sides of the extracted one and cannot be employed when the second primary molar is lost before eruption of the first permanent molar. Therefore, a special type has been devised for these cases, using the distal

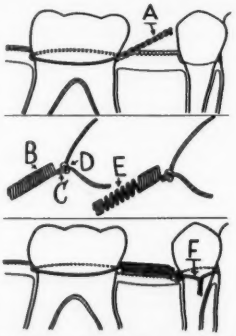

FIG. 3. Space "regainer." A stainless steel wire is placed around and at the bottom of the gingival pocket of the posterior tooth. The ends are twisted and cut to reach the distal surface of the anterior tooth (A). A coil of the same length as the interdental space is applied over this string (B). Two turns of the coil are bent 90 degrees to form a loop (C) through which a soft steel wire is fastened (D). The coiled tube is activated to form a coil spring as in (E). The activated (elongated) coil spring is attached to anterior tooth as in (F).

wall of the alveolus of the extracted second primary molar as support (Fig. 2). The two ends of a stainless steel wire (0.4 mm) are fixed in a pair of artery tweezers (A) and in the loop thus formed, a dental bur is inserted as in (B). The wire is then twisted firmly (C) into a string, 2 to 4 mm longer than the distance from the distal wall of the alveolus of the second primary molar. The free wire ends are placed around the first primary molar and tightened, firmly embracing this tooth at the bottom of the pocket. The distal end of the twisted string is then bent 90 degrees and adjusted to the distal wall of the socket of the extracted tooth. Obviously, this type of space maintainer must be put in immediately after the extraction of the tooth. A radiograph is shown in Fig. 6.

When the first permanent molar breaks through, this type of space maintainer can be exchanged for the one previously described (Fig. 4).

Space Regainer

In some cases it may be desirable to increase the space between two teeth. For this purpose a space "regainer" of the following design may be used (Fig. 3). A soft stainless steel wire (0.25 mm) is placed around the posterior tooth and tightened in such a way that it slides into the pocket. The ends should be twisted as in (A), the twisted portion of the wire corresponding to the width of the space. Care should be taken to leave the twisted ends extending out of the pocket at the center of the mesial surface. A coil spring (made of hard stainless steel) of a length corresponding to the interdental space (B), is placed on this twisted string. The two last turns of the spring are bent 90 degrees in order to form a loop as in (C). To this loop a soft stainless steel wire (0.25 mm) is tied with a regular knot (D) and placed at the bottom of the pocket of the anterior tooth where it is thoroughly tightened (F). The coil spring (B) is the actual space regainer. It is activated to the desired extent by being stretched as in (E) before insertion. It will then work like a spring to increase the space between the teeth.

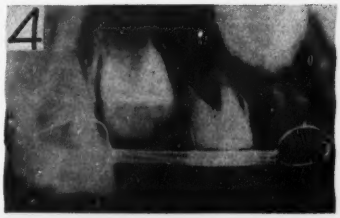

Fig. 4. Space maintainer with upper primary cuspid and upper first permanent molar as abutment teeth.

Fig. 5. Space maintainer with upper primary cuspid and second molar as abutment teeth.

Fig. 6. Space maintainer for an unerupted first permanent molar.

Clinical Observations

This method has been used for 5 years and 972 appliances of the three different

TABLE I

Observation Period in Years	No. of Space Maintainers in Children	
	3–7 yrs.	>7 yrs.
<1	166	124
1 –1½	41	163
1½–2	38	127
2 –2½	22	178
2½–3	7	88
3 –3½	6	10
>3½	2	0
	282	690

types are all in use at the moment (Table I).

Clinical observations show that the soft tissue heals completely around the wires. Signs of inflammation were seldom seen. The children tolerated the appliances very well, and they never complained of any discomfort. In no case were there any complications and premature shedding of the abutment teeth was not observed. The average time needed for construction and application of the space maintainer (extraction included) is 15 minutes. For the insertion of the space "regainer" a little more time is required.

Discussion

The main objection to this type of space maintainer and space "regainer" would be that the wires, when inserted into healthy pockets, would damage the supporting tissue of the teeth. Clinical observations revealed, however, that the soft tissue healed around the wires, and clinical signs of inflammation were usually absent. There were no signs that the wires caused any destruction of the supporting structures of the abutment teeth. The clinical observations have been corroborated by Waerhaug[14] in an experimental histological investigation to which the reader is referred. There seems, consequently, to be no basic objection against the principle of applying stainless steel wires at the bottom of healthy pockets—at least not in primary teeth. It was observed that a minor localized pocket deepening could occur in some cases.[14] Such a possibility must be taken into consideration when the wire retainer occasionally has to be placed around permanent teeth. However, a slight loss of supporting structure is a small price to pay for the prevention of malocclusions in the permanent dentition. In this connection it should be mentioned that hardly any type of space maintainer can be completely innocuous. If a space maintainer is placed on a permanent tooth, the precaution should be taken that the tooth be thoroughly scaled and polished to the bottom of the pocket after removal of the wires. This should be done in order to remove bacterial plaque which under unfavorable conditions may form on the tooth surface.

Objections may also be raised against the application of stainless steel wires into the extraction wound of the second primary molar. However, complete healing was also found in these cases, as far as could be determined clinically. There is no reason to assume that the tissue reaction inside the wound would be different from the reaction in the gingival pockets.

Space maintainers of this type may occasionally be found completely embedded in the soft tissue. However, when the permanent tooth erupts the wire is lifted out of the soft tissue. When the permanent tooth has erupted far enough to be blocked by the space maintainer, this should be removed.

The main advantage of the appliances here described lies in the extremely short time needed for their construction. This opens the possibility of providing space

maintenance in all cases of premature loss of primary teeth. A considerable number of malocclusions may be prevented in this manner.

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Institute of Dental Research
Oslo, Norway

Unit News

Ohio

The Columbus Chapter of the American Society of Dentistry for Children held a dinner meeting Thursday, May 19, at the Ohio Union, Ohio State University. The program consisted of a panel of orthodontists: Drs. Robert Kincaid, Cecil Shustick, Bertram Goodman. They discussed behavior and growth problems relating to orthodontics and pedodontics.

New officers for the coming year were elected. They are:

Harold L. Monett—President
Everett Tracy—Vice President
William C. Maddox—Secretary-Treasurer

Nebraska

At the April 1955 meeting in Kearney, Nebraska, Dr. Herb Seeberg, president of our unit, presented a very interesting program. Approximately one hundred twenty-seven members attended to hear our guest lecturer, Dr. Roy M. Wolff. He gave a very fine presentation on office economics.

Nebraska Unit met again in May, during the Nebraska State Dental Association meeting to present awards to the senior in two dental schools who displayed the greatest interest and achievement in pedodontics. Nebraska University winners were Dr. James E. Thomas and William P. Maxe. The Creighton University winners were James Colyer and Coleman Dell.

Election of officers was held and the new officers for this year are as follows:

Robert Kierstead—President
Doyle Gustafson—President-Elect
Edwin Hibbard—Secretary-Treasurer
Willard Guard—Editor

New Jersey

Francis Lehr reports that after a summer's respite, N. J. has packed up their vacations and set about the task of organizing its schedule of activities for the current year. President Al Theurer has appointed a group of hustling committee chairmen, and at the post-summer Executive Board meeting held in September the following outline of events to come was placed on the "planning board".

Milt Cooper, following the successful venture of his "Graduate Studies Committee" last year, will arrange for another one-day intensive study course for March or April.

Plans for the Annual Mid-Winter Meeting were made by "Veep" Saul Gale, in charge of arrangements. The date was set for Wednesday, January 11th, at the Robert Treat Hotel in Newark, with a day of table clinics and educational films, followed by a dinner and paper delivered by Editor Al Seyler.

Chairman of Membership, Wil Jordan, announced an intensive drive to increase the roll from their present high of 273 to at least 350. All members of the Executive Board, as well as the membership in general, are expected to help swell the ranks.

We are happy and most proud to report that one of our active members, Larry Burdge, who received a citation in our society for outstanding service, and who was honored by election as Vice President of the A.S.D.C., has been singled for yet

another distinction: he has been recently elected by the N. J. State Society and appointed by the Governor, Robert Meyner, as a member of the N. J. State Board of Dental Examiners and Registration. All we can say is, "it couldn't have happened to a nicer guy!" Larry Burdge also is serving as liaison between our society and the N. J. State Dental Society.

Another of our "old reliables" (the "old" referring to years of service, not age!), Sid Cohen, is preparing papers on Pedodontics for presentation at several component society meetings this winter. We have circularized the various components of the state dental society, offering to supply them with speakers on the subject, and this marks the third request we have had to date. Here's an idea we pass along to other groups; you not only perform a service for organized dentistry, but you stimulate interest in this oft neglected field as well (and, incidentally, in our own society!)

All in all, this should be another banner year for N.J.S.D.C. If you plan to be in the vicinity of N. J. on April 24, try to include in your schedule of "must" events our Annual Meeting in Atlantic City.

Southern California

Wallace L. May reports that the following are the Southern California State Unit Officers for 1955–1956:

President—C. Elwood Laine, 127 No. Madison Ave., Pasadena
Vice-President—John O. Whitaker, 847 West 9th St., San Pedro
Pres-Elect—Dean E. Huchel, 10742 Riverside Dr., North Hollywood
Sec'y-Treas—Mode R. Perry, 1033 Gayley Avenue, Los Angeles

In August members of the A.S.D.C. in conjunction with our northern counterpart attended the Northern California fifth annual seminar at Santa Barbara for 3 days. Headline clinicians were Allan G. Brodie and Thomas K. Barber.

David Law of Washington, at Southern California Meeting in September

Late in September our group held its first meeting with Drs. David B. Law and James A. Fleege presenting afternoon table clinics followed by essays after dinner on "Vital and Non-Vital Pulpotomy—A Report on Recent Clinical and Histological Research." Under the direction of both these capable men rhesus monkeys were used to carry out non-vital pulpotomies and histological evidence then presented from this research.

The November meeting had a headliner and neighbor, Rafael Rodriquez, M.D., Mexico City speaking upon "Fundamentals of Endocrinology for Dentists."

In March 1956, Tuesday through Friday, the 21–24th the fourth annual postgraduate seminar will be held at Ojai Valley Inn. This will be with limited attendance so plan and act quickly.

Indiana

"During the year 1954–55 the activities of the newly formed Indiana Unit speeded up tremendously. Under the guidance of the first president, Ralph McDonald, we grew from 20 members to 65 and started

an annual fall meeting in conjunction with the Indiana University School of Dentistry Alumni Association. This meeting was held at Bloomington, Indiana, on October 8, 1954, featuring a program by Dr. Joseph C. Muhler and Dr. G. T. Gregory and was very successful with a 115% turnout.

We were then asked to co-sponsor a meeting with the Indiana Cancer Society during April at the Medical Center in Indianapolis. The all day program was concerned with oral tumors of children and we were assisted greatly by Maury Massler and Isaac Schour plus many members of the Indiana University Medical School and Dental School faculties.

Our annual meeting was held in conjunction with the Indiana State Dental Meeting in May and Ralph McDonald turned the gavel to Jack Bryan (Evansville) for the coming year.

Our other new officers are as follows. W. "Froggie" Stamper (Indianapolis), president-elect, George Stragand (Richmond), vice president. The same secretary (unfortunately!) was re-elected! Our speaker for the meeting was Dr. James E. Simmons, Director of the Marion County Child Guidance Clinic. Having had extensive training and experience in the field of child psychology, Dr. Simmons talk on "Fears of Children" was extremely helpful to all of us in our understanding of the psychological approach to the child dental patient.

Our Fall program began in September at Bloomington, Indiana, and presented Thomas K. Barber (Chicago). His topic, "The Management of Potential and Actual Exposures of Primary and Young Permanent Teeth", provoked a very stimulating discussion period.

All in all the Indiana Unit is growing and progressing much greater than any of our expectations. We hope to have our newly formed Public Relations Committee (R. E. McDonald, M. Linderman, R. Rothaar, W. Croxton, W. Stamper, T. C. Smiley, and R. E. Jennings) to produce something real good for Child Dental Health Week.

Our new Executive Council consists of the officers plus R. Rothaar, (Muncie), Betty Koss, (Indianapolis), and P. Raibley (Evansville). Our Membership Committee now consists of John Werner (Elkhart), R. McDonald (Indianapolis), Betty Graves (Indianapolis), L. A. Lang (Muncie), and J. Waymire (Elwood).

With much hard work by all members we hope to grow above our present membership of 75 and, as a minimum, double our activities this year."

Arizona

Dear Dr. Noonan:

We note with dismay that the officers for the Arizona Unit as listed in the latest A.S.D.C. Journal are four years out of date!! The following are the officers of the Arizona Unit for the year 1955–56:

President—Dr. George Kendig, 1502 W. Osborn Road, Phoenix, Arizona

Vice Pres.—Dr. Thomas F. Moore, 550 W. Thomas Road, Phoenix, Arizona

Sec. Treas.—Dr. Robert H. Huntington, 550 W. Thomas Road, Phoenix, Arizona

We shall make it a point to keep all departments informed of all changes in the future.

Robert H. Huntington, D.M.D.

Michigan

The annual meeting which was held in conjunction with the Michigan State Dental Society had some international flavor to it. Wilf Feasby from Hamilton, Ontario was the speaker at the luncheon. All reports on Wilf's three clinics were the same, "Canada can be proud."

The election of officers resulted in the following slate:
President—Hugh M. Kopel
Vice President—Joseph Cabot
Secretary-treasurer—George Guest

Arkansas

Officers elected for the ensuing year are:
President—Haile P. Bowers, Jonesboro, Ark.
Vice President—John Yarbrough, Magnolia, Ark.
Secretary-treasurer—J. R. Luten, Jr, Little Rock, Ark.

Executive Committee

Bill Cloud—Little Rock
C. W. Nickels—Walnut Ridge
Lloyd Flint—Camden
Basil Gibbs—Star City

Dr. Ralph Ireland, University of Nebraska, gave an excellent presentation on cavity preparation and partial dentures for the child patient which was well received by all in attendance.

Iowa

The Iowa Unit of the American Society of Dentistry for Children held its annual meeting on April 4, 1955 in Des Moines, Iowa.

Dr. Allen Frankle, a practicing clinical psychologist, presented the morning program on "The Psychological Approach to Dentistry for Children", and Dr. Jack Spevac, a pediatrician, discussed "Oral Manifestation of Disease in Children" during the afternoon session.

Approximately sixty members were in attendance. The following officers were elected to serve during the current year:
President—J. H. Devaney
Pres.-elect—Robert Glenn
Vice Pres—M. A. Dalchow
Editor, Iowa Unit—W. G. Goodale

Elected to the Board of Directors were:
Kenneth E. Wessels, retiring president
W. R. Ostheimer
A. Miles Olson

Projects of the Iowa Unit currently include establishment of regional study clubs throughout the state, under the sponsorship of the Iowa Unit.

Massachusetts

Ralph McDonald was the speaker at the May 2nd meeting and his subject, "Rampant Caries Problem with Special Emphasis on the Role of Saliva in Caries Control" was stimulating and lead to a lively discussion.

The officers elected for the coming year are:
President—Frederick Shiere
Vice President—Sumner Wolfson
Secretary-Treas—Egil Klinkenberg

Past president Paul F. Sydow and Egil Klinkenberg did a fine job clinicing at the North Eastern Dental Society at Swampscott in June.

NOTICE

Deadline dates for material to be published in our Journal in 1956 are as follows: 2nd Q April 1, 3rd Q June 1, 4th Q October 1.

Unit News should be sent to Mel Noonan, 630 N. Woodward, Birmingham, Michigan at least two weeks prior to the above dates.

A Procedure of General Anesthesia for Operative Dentistry

ELI BROWN, M.D.* AND HUGH M. KOPEL, D.D.S., M.S.†

THE dental care and treatment of the handicapped and difficult patient is one of the most tedious and arduous tasks that present in the dental office. The problem reaches even greater proportions when one is dealing with children.

A patient attitude and a psychological approach toward the child by the attending dentist overcomes the difficulties encountered with some children. There is, however, a large group of youngsters who cannot be handled in the routine manner even when sedative measures or mechanical aids are used. This group includes children who are severely handicapped with cerebral palsy or mental retardation as well as the children who possess a completely recalcitrant attitude.

For these children, general anesthesia appears to be the logical state under which dental treatment should be performed. When the anesthesia is being administered by a competent anesthesiologist and the mandible is completely relaxed, the dental surgeon may then turn his complete attention to the oral cavity. In such a situation, it is usually possible to complete extensive restorative procedures in one operation. By so doing, one avoids many prolonged and difficult office visits. The dentist is able to rehabilitate badly neglected dentitions by restoring them rather than performing multiple extractions.

General anesthesia has an added advantage in that the child has experienced no pain or discomfort and therefore, his future association with the dentist will be much more easily accepted.

The objections to general anesthesia for dentistry are:

1. The possible increase in morbidity and mortality for what would otherwise be a relatively benign procedure.
2. The emotional disturbances of the child may be enhanced by his presence in a hospital and/or submitting the youngster to general anesthetic procedures.
3. The danger of using explosive agents in the presence of electrical apparatus necessary to dental procedures.
4. The increased financial burden to the parents engendered by a hospital admission where hospitalization programs do not cover dentistry.

The objections that have been cited can be reduced to a minimum by the use of a carefully planned procedure in the hands of a competent anesthesiologist and by close cooperation between the dentist and the anesthesiologist.

PROCEDURE

A. Pre-admission examination

Prior to hospital admission, the patient receives a complete physical examination by his family physician. The purpose of this examination is to determine whether or not the patient is in satisfactory condition to withstand anesthesia and dental surgery. If the patient has a cold or sore throat, it should be treated prior to admission thus eliminating unnecessary delay and increased hospital expense.

* Chief of Anesthesiology Sinai Hospital of Detroit.

† Dental and Oral Surgery Staff Sinai Hospital of Detroit.

B. Day of admission

Patients are admitted to the hospital early in the morning on the day of surgery. If the patient is extremely difficult to handle, a barbiturate may be given at home before the patient enters the hospital.

On admission to the hospital, the patient's history is taken, a physical examination is performed by the interne and routine laboratory work is done.

The time of surgery is planned for late morning or early afternoon. The patient should have nothing by mouth either at home or in the hospital on the morning of the day of surgery. The anesthesiologist sees the patient and orders the preoperative medication which usually consists of a barbiturate to be administered two hours prior to surgery, and a belladonna derivative, usually scopolamine, administered forty five minutes before the call to the operating room. This preoperative visit also gives the anesthesiologist a chance to become acquainted with the patient and allay any apprehension.

An attempt is made to explain to the patient that he will not be subjected to any pain or discomfort. With younger children we have found it most helpful to present the procedure as a sort of game. The child is told that he will speak into the "microphone of a space machine" and that he can speak to his favorite television or movie star. When dealing with older children, it is usually sufficient to merely assure them that we will not place a mask over his face.

C. Induction of Anesthesia

When the child enters the operating suite, he should be met by the anesthesiologist. From that moment on the anesthesiologist assumes complete charge of the child. It is very important to continuously reassure the patient while he is in the operating suite. In younger children, anesthesia is begun by having the child speak into an ordinary rubber tubing. When he has become adapted to the tube, a high flow of cyclopropane is started through the tube. The child is usually aware of the gas, but if he is assured that it is nothing more than "space air", it will satisfy his troubled curiosity. As soon as the child falls asleep, an ordinary ether mask is placed over the face and the induction of anesthesia is continued with vinethene and ether.

When the patient is sufficiently anesthetized, an endotracheal tube is passed via the nasal route into the trachea. The endotracheal tube can then be attached to any of the commonly used techniques for children such as the Ayres, Digby-Leigh valve or Stephen-Slater valve. The anesthetic used is now nitrous oxide and oxygen in the ratio of 3:1. At this time an intravenous is started and a very slow drip of a 0.1% solution of succinylcholine in 5% glucose in water is begun.

The next step is to pack the pharynx with ordinary gauze which has been moistened with water. The purpose of the pharyngeal pack is (1) to assure a tight fit for the endotracheal tube and (2) to prevent debris from passing into the trachea or esophagus.

After this step has been accomplished, the dental surgeon inserts a mouth prop and may now proceed with the operative measures. By varying the rate of flow of the succinylcholine, it is possible to keep the lower jaw relaxed at all times. It has not been necessary in this anesthetic technique to increase the ratio of the nitrous oxide–oxygen above 3:1 at any time.

In older children (above the age of 10 or 12), the procedure varies only in that intravenous pentothal is used for induction instead of the cyclopropane, vinethene, ether sequence.

D. Operative procedures

All types of pedodontic work may now be accomplished in a most efficient manner. The dental assistant works from two movable stands that can be placed over the reclined patient. On one stand is placed the necessary instruments for cavity preparations. The other stand contains the instruments that are used for the insertion of the filling materials. Fillings of silver amalgam, synthetic procelain and stainless steel crowns can be inserted in an ideal manner to restore the teeth to normal function.

Following complete irrigation and aspiration of the oral cavity to remove debris, any necessary extractions can now be done. The tooth sockets should be sutured to aid in clotting and the prevention of excess hemorrhage.

E. Recovery period

At the completion of the dental work, the anesthetic is discontinued, tracheal toilet is performed and the endotracheal tube and packing are removed.

In most cases the patient has usually reacted on the operating table almost immediately after surgery. All cases, however, are transferred to a post-operative recovery ward. The patient remains in the recovery ward until he is fully conscious and aware of his surroundings. In none of our cases thus far, has this been longer than 30 minutes postoperatively.

The patient is then returned to his room where he remains until early evening of the day of surgery. He is again seen by the anesthesiologist and it being determined that there are no untoward sequelae or complications of anesthesia and surgery, the patient is discharged.

Discussion

By following the procedure outlined above, it has been possible for us to administer general anesthesia and give the necessary dental care to children with physical, mental or emotional problems, without encountering any serious complications or sequelae. In the hands of a competent anesthesiologist, the technique is safe. In the presence of sufficient oxygen, nitrous oxide is one of the most benign agents in the anesthesia armamentarium.

Album[1] reported the use of general anesthesia for children with cerebral palsy. Premedication consisted of morphine sulfate and scopolamine. Nembutal® was also administered. He used a cyclopropane ether sequence for induction of anesthesia and employed pentothal, nitrous oxide and oxygen for the maintenance of anesthesia. Patency of the airway was assured by the use of a naso-tracheal tube. The author states in subsequent publications[2, 3] that although the technique provided satisfactory working conditions, there was some nausea, and delay before the child was fully awake. Therefore his technique was modified. Demerol was substituted for the morphine in the premedication. Nitrous oxide/oxygen and trichlorethylene were combined and an intravenous solution of succinylcholine was used for the induction and maintenance of anesthesia.

Gross[4] has also outlined a technique of general anesthesia for pedodontics. The patient is admitted to the hospital the day before surgery. His pre-operative medication is started with an opiate and atropine one hour pre-operative and a barbiturate two hours pre-operative. Rectal avertin or pentothal is used for basal anesthesia, followed by either vinethene/ether sequence or an intravenous curare or curare-like agent prior to intubation. The patient is then maintained on nitrous oxide/oxygen and curare agents. Gross prefers the oral intubation method on children below 8 years of age because nasal intubation here may produce nasal

hemorrhage. Via[6] agrees with Gross that it is usually necessary to insert an endotracheal tube via the mouth. Leigh and Belton[5] also state that the oro-tracheal route is to be preferred for intubation.

We have eliminated the use of an opiate from the pre-anesthetic medication in order to avoid undesirable side reactions such as nausea and vomiting and to prevent any delay in awakening following surgery. The omission of an opiate does not in any way prejudice the smooth induction of anesthesia using the technique we have outlined.

Although the anesthetic agents used for the induction of anesthesia in our technique for younger children are explosive, this will not present a hazard provided the recommended procedures for the prevention of fires and explosions are followed.[7] Following intubation, the agents used are non-explosive and sufficient time has elapsed for any explosive vapors to "clear" before the dental procedures are begun. Other workers have used non-explosive agents in conjunction with a relaxant for the induction of anesthesia, but we feel that our technique is safer because it decreases the likelihood of hypoxia at the time of intubation.

The use of naso-tracheal intubation is distinctly advantageous to the dental surgeon because it allows him an unhampered field in which to work. If one chooses the proper size of endotracheal tube and takes care to introduce it gently without forcing, hemorrhage from the nose should not occur. It should be pointed out, however, that where the child presents a history of blood dyscrasia or abnormal bleeding tendency, the nasal route should not be used.

In our work, we have not found it necessary to use a supplementary agent such as trichlorethylene for the maintenance of anesthesia. We have found that succinylcholine in the small amounts necessary to provide relaxation of the jaw to be safe provided the anesthesiologist is careful to assist respiration and is prepared to control the respiration should this become necessary.

The cost of hospital care with our procedure is reduced to a minimum by limiting the hospital stay to one day. It is our feeling that the added safety to the patient and the convenience of performing the procedures under hospital conditions, justifies the small increase in cost to the patient.

With this technique of general anesthesia, the handicapped, difficult and the hypersensitive patient can now have satisfactory dental care that would otherwise be excluded. For the dentist, no longer are apologies necessary for inadequate dental care in this group of patients.

Summary

A definite routine has been outlined for the purpose of administering general anesthesia to the handicapped and difficult patient in need of extensive dental treatment.

We have found the technique to be both practical and safe when used by competent personnel under the proper conditions.

Sinai Hospital of Detroit
6767 West Outer Drive
Detroit 35, Michigan

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Space Control

B. L. Gainsforth, D.D.S., M.S.*

In many of our Dental Schools space maintenance is taken care of largely in the Departments of Pedodontics. Fortunately, these departments do not limit their services strictly to maintenance of space, but rather practice *space control.* Space control is actually orthodontics, yet we feel that this service reaches into many more offices when presented within the scope of Pedodontic training. It is difficult for any dentist to practice orthodontics without first receiving a specialized training in the field, and second, fully or partially limiting his time to the practice of that branch of dentistry. In many midwestern states a rural condition prevails throughout most of the area making it impractical for a man to spend the time and money necessary to receive graduate training in either orthodontics or pedodontics when he is going into an area where he cannot specialize. Since pedodontics receives a much broader portion of the student's undergraduate time there is more of this type of service carried into the rural dental offices. It is therefore proper that the simpler forms of orthodontics including space maintenance, adjustment of bite, and some of the appliances to control space should be practiced by the dentists who render service to child patients, whether on a full or part time basis.

Spaces may occur from the loss of primary teeth, loss of permanent teeth, congenital absence of teeth, overactive tongue, thumb-finger habits and other deviations from the normal dental environment. In the individual case which comes to our attention we must choose between four methods of procedure: 1. *Maintain the space; 2. Create additional* space; 3. Reduce the amount of space; or 4. *Leave it alone.*

When a primary molar is lost early, too many of us tell a parent "Drop in next Fall and we will see whether the space is closing". Then we secretly hope they forget our advice and simply not bother us about it! But, believe it or not, some parents do report back with their child, or some of the wiser ones send the child to the office by himself for a recheck. Now, at this re-examination appointment, how do we know whether the space is closing or not? If we have a micrometric memory and find that the space has closed too far to allow the succeeding tooth to erupt, is it then a case for maintenance, or have we allowed the child's teeth to drift to the extent that full orthodontic treatment may be needed?

It is true that there are times when we feel justified in standing by and observing whether a space is going to close or not. Since the use of a gauge or rule is difficult for accurate observation, it is common practice by many to use the tapered stick method of measuring spaces (Fig. 1). In this method we simply cut a tongue depressor to a point with a long taper which may be inserted into the space to be measured. With a pencil we mark a dot at the point where the blade contacts each adjacent tooth. The blade is then removed and a connecting line is drawn between the two dots making a mark across the blade from one side to

* Assistant Professor Pedodontics, Univ. of Nebraska.

FIG. 1. The use of a tongue blade, cut to a taper, inserted into a space and marked to indicate the point at which teeth contact the blade. The dotted line indicates the point at which loss of space must be checked.

the other. Upon the broad portion of the tongue depressor the date and name of the patient is recorded, also in pencil, and the blade filed with the records of that patient. Upon later examination, using the same tapered blade as a gauge, it may be readily noted whether the diameter previously marked passes further into or is held further out of the space being examined. This method will indicate even a minute closure if it has occurred. A dotted line may be placed across the tapered blade at the diameter at which the operator feels that drift should be checked and maintenance sought.

Too often we observe space instead of actually doing something about it. We tell ourselves that the lower second bicuspid is smaller mesio-distally than the second primary molar which precedes it and that the same relationship exists between the first bicuspid and the first primary molar. We are told that if the lower primary molars on the same side of the arch are lost, that the first permanent molar can be allowed to drift mesially, into what we shall call the reserve space, in the amount of 3.6 mm. without crowding the bicuspids (Fig. 2). We forget, however, that a primary cuspid, having an average diameter of 5 mm. is to be followed by a permanent cuspid which may be expected to have a diameter of about 6.9 mm. Now we have a mandibular reserve of 1.7 mm. instead of 3.5 mm. If the mesio-distal diameters of mandibular primary teeth from midline to and including the second primary molar on one side are added the result, according to Black's average measurements, is 30.9 mm. The permanent successors to these teeth will measure, according to the same chart of averages, 32.2 mm. To state the problem simply the permanent teeth from incisors back to and including second bicuspids require more room for alignment than the ten primary teeth which precede them.

Fig. 3 shows a graphic study of the upper arch comparing the sizes of primary teeth to the succeeding permanent teeth in the mesio-distal dimension. If both primary molars on one side are lost and two bicuspids erupt there is a gain in space of 1.5 mm. If a cuspid and two molars are lost in series and the three succeeding teeth (of average size) erupt there is a gain of only .9 mm. If the diameters of ten primary upper teeth on one side are added and compared to the diameters of their expected successors

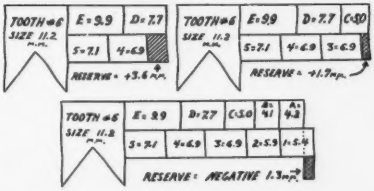

FIG. 2. Diagram of lower first permanent molar, primary teeth of one side of the arch and permanent successors. Note that two primary molars (D and E) are larger mesio-distally than the bicuspids (4 and 5) which will follow giving a "reserve" space of 3.6 mm. Considering C, D, and E followed by 3, 4, and 5 the "reserve" drops to 1.7 mm. Diameter of A to E compared to 1 to 5 there is no longer a reserve space but a negative 1.3 mm.

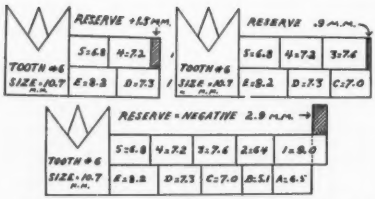

FIG. 3. Diagram similar to Fig. 2. but for upper primary teeth with dimensions compared to those of succeeding permanent teeth. D and E have reserve space over 4 and 5; less if the cuspid is considered and a negative or shortage of space if all teeth from center are considered.

there is no "reserve space" but again we are thrown for a loss, this time in the amount of 2.9 mm.

This additional arch dimension must be gained by the slight upward and outward migration of teeth during the growth of the jaws, which in the lateral direction is slight. As pointed out by Higley[1] the cast of an normal child's arch may be nearly superimposed over the anterior portion of a cast of a normal adult arch since by far the greatest jaw growth is in length rather than breadth. However there is a small increment in lateral growth, and without it we would perhaps never have a properly aligned permanent dentition.

Some space maintainers may inhibit lateral growth to some extent, especially those which resemble the partial denture (Fig. 4). It must be remembered, however, that the child does not wear such an appliance through all his growing years. The space maintainer is usually worn

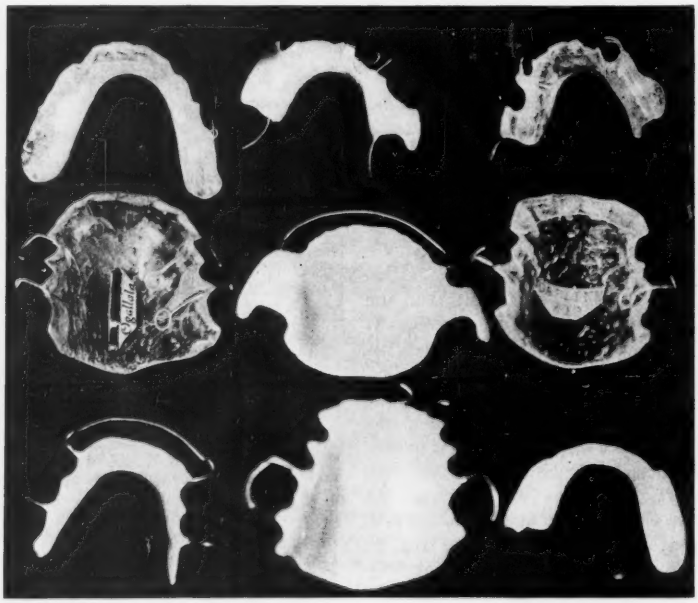

FIG. 4. Various types of upper and lower acrylic space-control appliances in pink and clear acrylic.

from one to three years, rarely four years. During this period of time the increment of lateral growth is slight. The arch-width charts of Stanton and Goldstein[2] show the dimension between cusps of primary cuspids to increase from age 5 to age 9 in the amount of 2.3 mm. in either maxillary of mandibular arches. This indicates an increment of growth of .575 mm. per year, slightly more than half a millimeter. Inhibition of some of this growth from cuspid to cuspid will surely be a lesser evil than sacrificing a much greater amount of arch length by allowing forward drift of posterior teeth, namely first permanent molars.

In this discussion, special emphasis will be placed upon the use of the acrylic plates and their variations for use in maintaining function and space (Fig. 4). Space perhaps outranks function in importance. With our present foods it is possible to masticate satisfactorily with much less than a full quota of teeth. However many children have as many as twelve primary teeth extracted before they are six years of age and in that event function is certainly an important phase of the restoration to be constructed.

The Need for Clasps

First let us consider the upper dentition with the early loss of one or more posterior primary teeth on each side. The first thought is of clasping as part of the design of either a full palate or horse-shoe upper partial. Many operators maintain that they make acrylic maintainers with no clasps. This is both possible and desirable in many cases. However, clasps properly adapted will give the child added security during the first days of wearing the new appliance. It is often noted that after wearing the plate for some time the child breaks off a clasp or all clasps and continues to wear the device with no difficulty. When the clasp has no orthodontic importance and is simply for the purpose of retention it may be loosened after a few weeks to see whether the child can retain the appliance without clasping. If the clasp proves to be unnecessary it may be removed and thus decrease the possibility of causing caries in the teeth contacted by the wire.

Very often the clasping of an acrylic denture or multiple space maintainer has an orthodontic function, as, opening a space, shifting a tooth labially or lingually, aligning anterior teeth or forming hooks for elastics. The chrome alloy wire is favored for clasping because of its elasticity, resistance to corrosion, economy, and ease of cleansing. The largest suggested in clasping of the appliances discussed is thirty thousandths of an inch in diameter, or, .030 wire. .030 is used on some molar clasps and on some of the more rigid labial archwires which are attached to the acrylic plates. Clasping in the anterior is usually done with .025 wire. The smaller appliances using very delicate clasps on primary teeth are often constructed using .020 wire.

Small wire allows more tooth movement between adjustment appointments since a given length of .020 wire has much more elasticity than the same length of .030. Auxiliaries for the opening of a space may be .020 or .025 and should be denuded or exposed back into the base plate as far as possible to allow a greater length of wire to be deflected upon placement and thus accomplish more movement between appointments without exerting a force which is too great.

The acrylic space maintainer may be unilateral as well as bilateral though function is less important in the unilateral loss of primary tooth structure and many operators prefer the band and loop for this problem. The upper acrylic plate

lends itself nicely to the use of the anterior bite plane as in the well known "Hawley" bite plate. The bite plane may, of course, be combined in the same appliance with a posterior space maintainer. In fact the bite plane is very effective when added to the usual upper adult partial denture when overbite is too great, regardless of age.

When posterior function is restored with the acrylic appliance it is possible to place acrylic teeth in the waxup and articulate them in the manner of an adult partial denture. Sets of acrylic primary denture teeth are now available, or the operator can, with little difficulty, adapt some of the bicuspids and small molars from an adult set of acrylic posteriors and with a little grinding make them serve quite well. If, however this additional technic makes the cost of the appliance a hardship to the patient, or if the additional time required deprives some other child of receiving a needed service then the posterior blocks of the plates had best be all base acrylic and ground to accurate occlusion.

The Acrylic Partial

The acrylic partial lends itself nicely to the replacement of permanent anterior teeth which have been lost early. Fixed bridgework using bands and bars is seldom desirable in this deformity since proper migration of teeth is usually inhibited. Porcelain or acrylic teeth can be attached to an upper horse-shoe to give the child a very acceptable appearance during the years in which he is not ready for fixed bridgework of the adult type, and when he would be extremely self-conscious without the restoration. A Steele's facing may be used for an anterior restoration in an acrylic plate if a "tail-wire" is soldered to the backing to hold it in the acrylic. A blunt-pin facing may be used if the pins are first bent together to bind the facing to the acrylic. If a tooth of proper shade is not available it is possible to set up a porcelain tooth of the right mold but wrong shade and invest the case. Then when the flask is opened for packing the case the porcelain tooth is simply lifted out and that portion of the case is packed with a small mix of one of the acrylic filling materials of the proper shade.

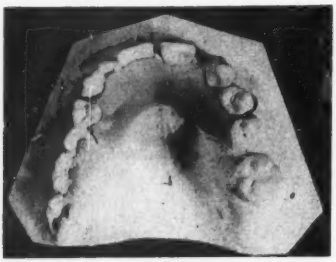

Fig. 5. Acrylic appliance with auxiliaries to re-open a space which has partially closed following loss of left lateral incisor (young adult).

When an anterior space has become partially closed before the child comes to the attention of the dentist a pair of .020 auxiliaries may be looped into the acrylic with the free ends protruding through the space and contacting the adjacent teeth (Fig. 5). After processing the case the wires are freed from the acrylic where they pass through the space and they are then activated to force the space open. At a later date a denture tooth may be attached by means of one of the quick-setting acrylics.

Lower Acrylic Partials

The lower acrylic space maintainer may be bilateral or unilateral. In either case an acrylic lingual bar is preferred over a metal one. Even the metal wire which is so often used as a re-inforcement seems

to defeat its own purpose by causing the acrylic to fracture in line with the wire.

Clasping in the unilateral case consists of short hook-type clasps which pass over the proximal margins and into the buccal embrasures of those teeth in the posterior of the non-edentulous side. In the bilateral or partial denture type of lower multiple space maintainer clasps usually occur on the first primary molars or primary cuspids. .020 or .025 wire is used depending on the size of the teeth and elasticity required. These clasps are adjusted lightly about the gingival border of the teeth and do not interfere with vertical migration of the teeth. As soon as the child has become accustomed to wearing the appliance the clasps are loosened and sometimes removed to allow natural adjustment of tooth position and to decrease the caries hazard.

Variations Possible

Again teeth may be used or not used and again a labial archwire may be attached for the purpose of anterior alignment in the older child. Auxiliaries may be used to open spaces, or posterior sections may be split, with wire loops connecting the separated halves to give an expanding posterior section for space opening.

Posterior sections of the lower acrylic plate may be built in hyperocclusion to relieve anterior over-bite while a lingually locked incisor is being shifted labially in the treatment of cross-bite. The anterior section of a lower acrylic plate may have an inclined plane incorporated into its structure, extending upward and backward from the incisal edges of the lower incisors for the treatment of mild or incipient cases of class III malocclusion (Angle) or lingually locked upper incisors.

Acrylic plates, upper or lower, may be used with a labial archwire attached, to condense spaced anteriors which have been forced outward from habits or close bite. A labial hook may be constructed at the distal of each cuspid and an elastic passed from one side to the other to give a nice condensing action to the anterior teeth in selected cases.

One of the greatest values of the acrylic appliance for posterior restorations is that when used prior to the eruption of the first permanent molar it seems to be effective in preventing that tooth from drifting forward even though it is unerupted.

Full Dentures for Children

Now and then the photo section of the press shows a dentist placing a full denture in the mouth of a child. Many of these full dentures are done without the knowledge of the press, occasionally at age 5 or 6. It is usually advisable at these ages to leave the central incisors out of the set-up and to cut away enough of the base to allow the central incisors to erupt. In the full or partial child dentures it is important to grind away the base material when and where a tooth begins to erupt and thus allow it to move to its proper position in the arch.

The acrylic appliance is not the answer to all needs. The band and loop, crown and loop, overlays and bar and other fixed maintainers have their places when only a few teeth are lost or when the nature of the child does not justify the use of a removable appliance. Space does not permit the discussion of these space maintainers herewith.

It is difficult to determine the point in classification at which space maintenance stops and true orthodontics starts. Many minor adjustments of tooth alignment can be made by the use of a few bands and a full or segment archwire, a coil spring or two, or some vertical spring loops but

this becomes more of an orthodontic problem.

Actually there is no one appliance to do any job. An appliance is a means to an end. An orthodontist, a pedodontist, or a general practitioner should use the mechanism, material, and philosophy which in his hands will bring about an acceptable result in the guidance of his child patient from the primary to the permanent dentition.

Conclusions

1. Space maintenance should be instituted as soon as sufficient room for all succeeding teeth is threatened.

2. In many cases maintenance alone is insufficient and space *control* must be practiced if the child is to receive a complete preventive service.

3. Space control appliances should, where possible, restore function.

4. Pedodontic appliances should allow maximum flexibility in the growth pattern.

5. Clasping should be functional as well as retentive.

6. Fixed bands and crowns solve some of the problems in which removable appliances are undesirable or insufficient.

7. Slight interference with growth by the pedodontic appliance is a lesser evil than the drift which takes place when mechanical aid is not utilized.

8. Space control appliances should be designed in accordance with the complexity of the problem, the material at hand, and the preference of the individual operator.

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Ogallala, Nebraska

Barium Sulfate and Antibiotic Mixture in Pulpotomy

WILLIAM F. VIA, JR., D.D.S., M.S.*

THE treatment of teeth with exposed vital pulpal tissue is of primary importance if the dentition is to be maintained intact. Many methods and materials have been proposed to preserve the integrity of the pulpal tissue and promote healing. The technic of pulpotomy followed by capping the pulp stumps with calcium hydroxide is the most successful. However, a recent study[7] has shown that this procedure fails to promote healing in a large percentage of teeth with carious exposures.

An experiment has been designed to test whether a polyantibiotic mixture with barium sulfate will promote healing of healthy pulps that have been exposed and amputated. The resultant effects of the test mixture upon pulpal tissue will be compared with the observed effect on control teeth that will be treated with calcium hydroxide.

REVIEW OF THE LITERATURE

In 1939, Zander,[8] and Glass and Zander[4] reported that a paste made of calcium hydroxide and water would promote healing of exposed vital pulpal tissue. The pulp heals by forming a layer of calcified secondary dentin over the exposure defect. Hess[5] and Brown[1] have confirmed this finding. Burke, and Cohen[2] have reported that paste composed of methyl cellulose and calcium hydroxide is equally as effective as calcium hydroxide and water in the production of a secondary dentin callus over the exposed area of vital pulpal tissue.

It has been found that teeth with carious exposures of their pulpal tissue do not respond as well to the technic of pulpotomy and capping with calcium hydroxide as do those teeth that were experimentally exposed and were non-carious. It seems logical to assume that the reason for the failure of calcium hydroxide to promote healing in the teeth with pulpal tissue exposed by caries is that the resistance of the pulpal tissue is lowered, or there is a sufficient number of bacteria present in the pulp to overwhelm the natural defenses of the pulpal tissue.[7] If the pulp dies due to bacterial invasion, it seems that a mixture of antibiotics may aid the natural defenses of the pulpal tissue to eliminate the bacteria, resulting in the return of the pulp to normal.

Seelig, Fowler, and Tanchester,[6] tested the effect of penicillin G plus calcium carbonate upon exposed vital pulpal tissue. They reported the pulps were healing normally after seven days. It is unfortunate that the animal was not allowed to live for a longer period of time because it is difficult to judge pulpotomy and medication in such a short time.

Grossman[3] in 1951, developed a mixture of antibiotics which proved to be effective against all the organisms isolated from infected root canals. Since the same organisms are encountered in infected exposed vital pulps, it was decided to test the effect of the Grossman formula upon

* Director, Pedodontic Section, Oral Surgery Division of Henry Ford Hospital, Detroit, Michigan.

vital pulpal tissue in the present experiment. The mixture consists of penicillin, streptomycin, bacitracin and sodium caprylate in a vehicle of DC200 silicone fluid. The compounds are compatible in the silicone and the mixture is stable. Subcutaneous tests were done upon rabbits using the fluid alone and the mixture to establish whether the material produced inflammation.

Experimental Procedure

The present experiment is designed to determine the effect of the polyantibiotic paste with barium sulfate upon normal vital pulpal tissue and to test the effect of barium sulfate alone on vital pulpal tissue. An experiment may be completed at a later date to determine the effect of polyantibiotic paste and barium sulfate upon infected and inflamed pulps.

Fig. 1. Pulpotomized tooth treated with polyantibiotic paste and barium sulfate. 1. Treatment mixture incorporated in dentin bridge. 2. Irregular dentin. 3. Regular dentin. 4. Artifact where treatment mixture was lost in sectioning.

A monkey served as the test subject. The animal was placed in a control chair and anesthetized with 1.5cc of 50 milligrams per cubic centimeter solution of nembutal, intraperitoneally. The animal was returned to her cage asleep following the operation and twelve hours later was fully awake.

Class V gingival cavities were prepared upon the upper and lower four central incisor teeth. The pulp was amputated through the axial wall of the cavity at the level of the gingiva in three of the teeth. The cavity in the other tooth was filled with zinc oxide and eugenol and used as a control. No attempt was made to keep the operative field sterile, however, it was possible to maintain the teeth in a dry condition throughout the operation. The upper right central incisor was pulpotomized and a heavy mixture of barium sulfate and polyantibiotic paste was placed with some pressure over the exposed pulpal stump and the cavity sealed with zinc oxide and eugenol cement. The upper left central incisor had the pulpal stump capped with dry calcium hydroxide and the cavity sealed with zinc oxide and eugenol cement. The lower right central incisor was capped with dry barium sulfate and the cavity sealed with zinc oxide and eugenol cement.

After a period of fourteen weeks had elapsed the animal was anesthetized with ether and the upper and lower incisor teeth removed. The teeth were prepared for fixing by grinding the mesial and distal surfaces to remove almost all of the enamel and dentin overlying the pulp.

The teeth were fixed in ten percent formol solution for two weeks. Decalcification was accomplished by a five percent solution of nitric acid which was changed daily for eight days. The teeth were then checked by comparing the radiopacity with that of a comparable size piece of soft tissue to determine whether the decalcification was complete. The teeth were embedded in celloidin, sectioned and stained with hematoxylin and eosin.

A study of the sections was made to determine the effect that the various test materials had upon the pulpal tissue by comparing it with a tooth treated by calcium hydroxide and water, (Fig. 3), by the tooth treated with a cavity preparation and zinc oxide and eugenol cement (Fig. 4). The tooth, (Fig. 2), that had been pulpotomized and treated with barium sulfate alone revealed a well formed dentin bridge covering the exposed portion of the pulp. Many cyrstals of barium sulfate were incorporated in the calcified dentin bridge and there were a few scattered crystals of barium sulfate in the portion of pulp adjacent to the dentin bridge. No inflammation was noted about these crystals. The thickness of the dentin bridge in this area was approximately the same as that of the control tooth in which calcium hydroxide was used. The odontoblasts lining the dentin bridge were low cuboidal in form and resembled the comparable cells in the control tooth treated by calcium hydroxide. It was

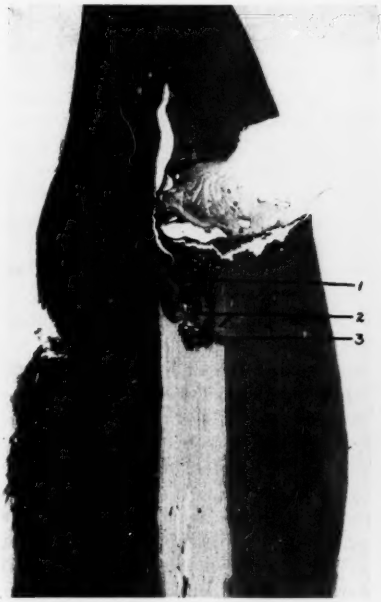

FIG. 2. Pulpotomized tooth treated with dry barium sulfate. 1. Barium sulfate. 2. Dentin bridge. 3. Barium sulfate.

FIG. 3. Pulpotomized tooth treated with calcium hydroxide. 1. Necrotic pulp. 2. Dentin bridge.

FIG. 4. Control tooth with class V cavity fill with Zinc Oxide and eugenol.

noticed, however, that there was no layer of necrotic pulpal tissue between the barium sulfate and the start of dentin bridge, as is observed when calcium hydroxide is used.

The experimental tooth, (Fig. 1), that was pulpotomized and capped by a mixture of polyantibiotic paste and a barium sulfate reveals a dentin bridge of more regular character than that observed with barium sulfate alone. The odontoblasts lining the dentin bridge were cuboidal and appeared normal. There were vacuoles in the section that originally must have been filled with the polyantibiotic mixture. The pulp tissue cells about these vacuoles were normal in character and no inflammation was noticed.

A comparison of figures 1, 2, 3 will show the relative thickenss of the dentin bridges and the lack of inflammation in the pulpal tissue. Note that the dentin bridges in figure 1 and 2 are much closer to the amputation site than the dentin bridge of figure 3, confirming the fact that the layer of necrosis noted in pulpotomized teeth treated with calcium hydroxide is not necessary for the production of a dentin bridge.

SUMMARY

An experiment has been conducted to test the effect of barium sulfate and a mixture of barium sulfate and polyantibiotic paste on the exposed vital healthy pulp tissue of a cynamolgus monkey. Class V gingival cavities were prepared in four incisor teeth. One was filled with zinc oxide and eugenol cement as a control. One was pulpotomized and the pulp stump capped by dry calcium hydroxide; one was capped with dry barium sulfate, and one with barium sulfate plus polyantibiotic mixture. It was found that both barium sulfate alone and barium sulfate plus polyantibiotic mixture promoted the production of a dentin bridge composed of tubular secondary dentin and resulted in maintaining a healthy vital pulp in the experimental teeth.

Barium sulfate crystals and vacuoles that contain the D200 silicone polyantibiotic mixture were found deep in the pulpal tissue and not surrounded by any inflammatory cells; it might be assumed, therefore, that these two materials are free from any inflammation-producing potential.

Since a secondary dentin bridge was produced using barium sulfate and barium sulfate plus polyantibiotic mixture in this experiment, it would seem that the presence of artificially placed calcium ions has little to do with the production of secondary dentin.

It has been found that a dentin bridge may be produced by compounds other than calcium hydroxide and that the pulpal tissue responds favorably to a mixture of antibiotics; it would seem logical, therefore, that an experiment should be designed to test the effect of these compounds upon teeth with infected and inflamed pulps. Other non-inflammatory compounds which might be easily utilized as pulp capping material in dentistry should be tested.

Conclusions

1. Dry barium sulfate placed in direct contact with the pulpal stump of a pulpotomized tooth did not cause damage or produce inflammation in the remaining pulpal tissue in the teeth used in this investigation. A dentin bridge of normal character was produced directly beneath the layer of barium sulfate.

2. A paste made of Grossman's polyantibiotic mixture plus barium sulfate placed in direct contact with the pulpal stump of a pulpotomized tooth seems to promote the production of a dentin bridge and does not cause inflammation in the remaining pulpal tissue.

3. Artifically placed calcium ions in contact with the pulpal tissue are not necessary for the production of a secondary dentin bridge in a pulpotomized tooth.

Henry Ford Hospital
Detroit 2, Michigan

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Dental Reminder Forms

LEONARD F. MENCZER, D.D.S., M.P.H.

THE releasing of school children during school hours, for other than strictly educational purposes, has been a problem to educators for many years. Requests from parents for excusing their child from school included not only those for medical and dental appointments but also for religious, dancing, musical and other types of extra curricular instruction. As ridiculous as it may seem, some parents request excuse from school for shopping, payment of bills and even care of younger children. Of course, if each of these requests were honored, school would be "out" more than "in."

These educational interruptions and loss of school time present major problems to school authorities who are primarily charged with meeting the educational needs of school children. Certainly, education authorities are as much aware of the physical and emotional needs of school children as they are of their educational needs. However, it becomes increasingly more difficult for them to discharge their educational responsibilities in the light of these frequent requests.

The dental profession can co-operate with education authorities on this matter by working towards a saturation point of dental appointments for after-school hours, Saturdays and vacation periods. When that saturation point is reached and there are still unmet needs, the dentist, in his own good conscience, may and should request that school authorities release children during school hours in order to meet those needs. In this way, classroom interruptions and loss of school time (which may seriously handicap a child's formal education) will be kept at a minimum.

With the thought in mind of co-operating with educational authorities in this matter as well as to further foster the concept of regular and periodic dental care, the dental reminder form was developed.

Many school systems in the United States operate on the principle of eight weeks of school and one week of vacation throughout the school year. For those schools utilizing this system, the dental reminder form is applicable. This form, then, would be employed for the Christmas, February, April and Summer vacations. It is distributed to all children three to four weeks prior to these vacations. This time interval allows the parent an adequate period in which to call their family dentist for an appointment for the forthcoming vacation. Figures 1, 2, 3 and 4 are samples of the forms employed during the school year 1954–55 in Hartford. By printing these forms in color and changing each one, new interest is stimulated with each distribution, even though the message is essentially the same.

It will be noted that Figure 1, the form distributed for the Christmas vacation, calls to the parents' attention the seriousness of the dental health problem, the need for regular and periodic care and the desirability of obtaining that care during school vacations. Figures 2 and 4 carry essentially the same message: the need for proper diet, toothbrushing after meals, regular visits to the family dentist, while Figure 3, is an adaptation from

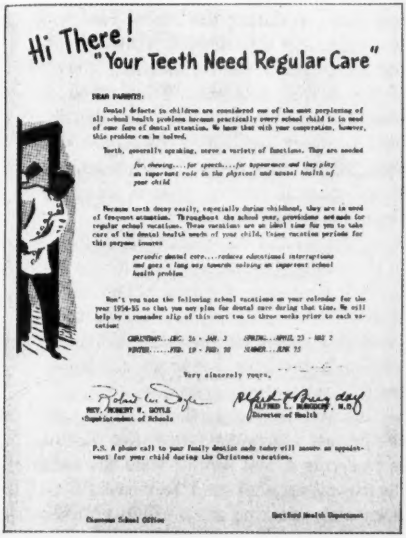
Hi There!
"Your Teeth Need Regular Care"
DEAR PARENTS:
Dental defects in children are considered one of the most perplexing of all school health problems because practically every school child is in need of some form of dental attention. We know that with your cooperation, however, this problem can be solved.
Teeth, generally speaking, serve a variety of functions. They are needed
for chewing.... for speech....for appearance and they play an important role in the physical and mental health of your child
Because teeth decay easily, especially during childhood, they are in need of frequent attention. Throughout the school year, provisions are made for regular school vacations. These vacations are an ideal time for you to take care of the dental health needs of your child. Three vacation periods for this purpose insures
periodic dental care....reduces educational interruptions and goes a long way towards solving an important school health problem
Won't you note the following school vacations on your calendar for the year 1954-55 so that you may plan for dental care during that time. We will help by a reminder slip of this sort two to three weeks prior to each vacation:
CHRISTMAS...DEC. 24 - JAN. 3 SPRING...APRIL 23 - MAY 2
EASTER.....FEB. 19 - FEB. 28 SUMMER...JUNE 25
Very sincerely yours,
REV. ROBERT F. BOYLE
Superintendent of Schools
ALFRED L. BLACKER, M.D.
Director of Health
P.S. A phone call to your family dentist made today will insure an appointment for your child during the Christmas vacation.
Common School Office
Hartford Health Department

FIG. 1

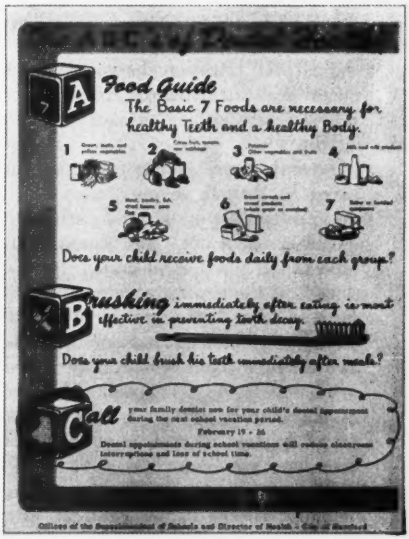
A
Food Guide
The Basic 7 Foods are necessary for healthy Teeth and a healthy Body.
1
2
3
4
5
6
7
Does your child receive foods daily from each group?
B
Brushing immediately after eating is most effective in preventing tooth decay.
Does your child brush his teeth immediately after meals?
Call
your family dentist now for your child's dental appointment during the next school vacation period.
February 19 - 26
Dental appointments during school vacations will reduce classroom interruptions and loss of school time.
Offices of the Superintendent of Schools and Director of Health - City of Hartford

FIG. 2

Taking care of health needs during school vacation is wise. In this way your child will not lose important school time.
We hope you will be going to your family dentist during this period.
DENTAL REMINDER FOR SCHOOL VACATION APRIL 23-30
DENTAL CARE IS PART OF YOUR CHILD'S OVERALL HEALTH NEEDS. REGULAR DENTAL CARE WILL INSURE BETTER GENERAL HEALTH FOR YOUR CHILD.

FIG. 3

DO'S OF DENTAL HEALTH
REGULAR VISITS TO YOUR DENTIST
WELL-BALANCED MEALS
NO SWEETS EXCEPT AT MEAL TIME
TOOTH-BRUSHING RIGHT AFTER EATING
COMPLETED DENTAL CARE DURING THE SUMMER MONTHS WILL MEAN A HEALTHIER CHILD TO MEET THE NEW SCHOOL YEAR NEXT FALL
HARTFORD BOARD OF EDUCATION AND HARTFORD HEALTH DEPARTMENT

FIG. 4

the A.D.A. 6th Annual Child Dental Health Week poster and merely calls to the parents' attention the importance of dental health and the forthcoming vacation period when dental care should be sought.

Separate forms of Figure 1 were prepared so that those distributed in the diocesan schools would be signed by the diocesan school office and those distributed in the board of education would be signed by the superintendent of schools. Each of these forms was printed by the photo offset method and done in either two or three colors, which lends further attractiveness to the layout. The costs of distributing 24,000 in the Hartford school systems, on each occasion, are not considered excessive.

In addition to the purposes already enumerated, the dental reminder form, at the time of each distribution, provides an occasion for a classroom discussion on the subject of dental health. The board of education and diocesan office is requested to have their classroom teachers devote either an entire class session or a part thereof to the subject of dental health at those times when these forms are distributed. This insures that at least four sessions during the school year will be devoted to this subject. To aid classroom teachers in their discussion, a copy of the A.D.A. pamphlet titled "Dental Health Facts for Teachers" was distributed to every teacher in the school systems. In this way, dental health teachings in school will receive greater attention than is presently the practice.

At the time of distributing these forms in the school systems, a copy is forwarded to each dentist in the community along with an accompanying note asking them to devote as much time as possible to children's dentistry during the forthcoming school vacation.

This activity, in particular, has made the private practicing dentist feel that he is receiving a real service from his local health department and has created an even nicer working relationship between public health and private dentistry. This new educational technique, too, has stimulated a greater interest on the part of the educator, the individual parent and the community as to the importance of dental health.

Hartford Health Department
56 Coventry St.
Hartford 12, Conn.

NOTICE

Deadline dates for material to be published in our Journal in 1956 are as follows: 2nd Q April 1, 3rd Q June 1, 4th Q October 1.

Unit News should be sent to Mel Noonan, 630 N. Woodward, Birmingham, Michigan at least two weeks prior to the above dates.

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THE AMERICAN SOCIETY OF DENTISTRY FOR CHILDREN

APPLICATION FOR MEMBERSHIP

I am interested in becoming a member of the American Society of Dentistry for Children.

NAME.....DEGREE.....

ADDRESS.....

.....

If you are a dentist or physician, you must be a member in good standing of your local dental or medical Society.

If you wish associate membership, please indicate affiliate society membership.

Send this application to:

American Society of Dentistry for Children
Mt. Royal and Guilford Avenues
Baltimore 2, Maryland

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